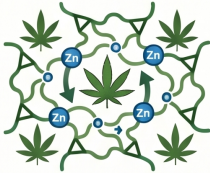


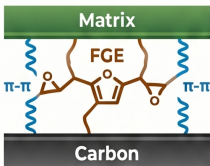
Hempoxies 54: The Future of Circular Bio-Composites

A programmable, high-performance material combining hemp-based chemistry with carbon reinforcement for a fully recyclable “vitrimers” composite.



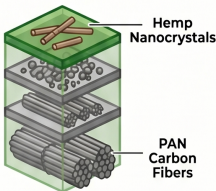
The Bio-Based Vitrimer Matrix

Epoxidized hempseed oil uses zinc catalysis to create a “malleable” network that preserves strength while allowing for self-healing.



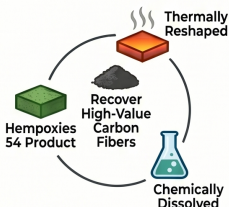
The FGE Molecular Bridge

Furfuryl Glycidyl Ether (FGE) acts as a bio-sourced “glue” that anchors the matrix to all carbon surfaces using $\pi-\pi$ stacking.



6-Phase Multi-Scale Carbon Reinforcement

Architecture spans 4 length scales—from macro-scale PAN carbon fibers to molecular-scale hemp nanocrystals.



100% Circular Material Lifecycle

Unlike traditional epoxies, this system can be thermally reshaped or chemically dissolved to recover high-value carbon fibers.